

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) A feeding amount controlling apparatus comprising:

feeding means for feeding a material;

detecting means for detecting feeding rate of the material;

first calculating means for calculating a total fed amount based on the feeding rate detected by the detecting means;

stopping means for stopping feeding the material;

second calculating means for calculating a preset amount by multiplying the feeding rate detected by the detecting means and delay time of the stopping means together; and

controlling means for generating the signal for working the stopping means when the total fed amount calculated by the first calculating means reaches a value defined as the difference between an intended amount and the preset amount calculated by the second calculating means;

wherein the feeding means comprises a feed rate shifting mechanism for shifting the feeding rate, the feed rate shifting mechanism being controlled by the controlling means.

2. (currently amended) A feeding amount controlling apparatus as defined in claim 1, wherein ~~the feeding means comprises feeding rate shifting mechanism for shifting the feeding rate~~ and the controlling means is capable of operating the feeding rate shifting mechanism in order to shift the feeding rate from a high rate to a low one when the total fed amount reaches a value defined as the difference between the intended amount and an alerting amount.

3. (original) A feeding amount controlling apparatus as defined in claim 2, wherein the controlling means is also capable of comparing the intended amount to the alerting amount at the start to measure the feeding amount and of operating the feeding rate shifting mechanism in order to shift the rate from high rate to low one when the intended amount is less than or equal to the alerting amount.

4. (previously presented) A feeding amount controlling apparatus as defined in claim 2, wherein the feeding rate shifting mechanism comprises larger diameter valve and smaller diameter valve which are respectively installed in main feeding line and by-pass feeding line thereof and can shift the feeding rate from high rate to low one by closing the large diameter valve.

5. (original) Method for controlling a feeding amount of material comprising steps of:

detecting a feeding rate;

calculating a total fed amount based on the detected feeding rate;

shifting the feeding rate from high to low when the total fed amount reaches a value of difference between the intended amount and the alerting amount;

calculating a preset amount based on the detected feeding rate and delay time of stopping means to stop feeding the material; and

generating a signal to work the stopping means when the calculated total fed amount reaches a value of difference between the intended amount and the preset amount.

6. (original) Method for controlling a feeding amount of material comprising steps of:

determining whether an intended amount is larger than an alerting amount;

opening stopping means to allow the material to be fed at high feeding rate if the intended amount is larger than the alerting amount;

detecting a feeding rate;

calculating a total fed amount based on the detected feeding rate;

shifting the feeding rate from high to low when the total fed amount reaches a value of difference between the intended amount and the alerting amount;

calculating a preset amount based on the detected feeding rate and delay time of stopping means to stop feeding the material; and

generating a signal to work the stopping means when the calculated total fed amount reaches a value of difference between the intended amount and the preset amount.

7. (original) Method for controlling a feeding amount of material comprising steps of:

determining whether an intended amount is larger than an alerting amount;

opening feeding means to allow the material to be fed at low feeding rate if the intended amount is less than or equal to the alerting amount ;

detecting a feeding rate;

calculating a total fed amount based on the detected feeding rate;

calculating a preset amount based on the detected feeding rate and delay time of stopping means to stop feeding the material; and

generating a signal to work the stopping means when the calculated total fed amount reaches a value of difference between the intended amount and the preset amount.

8. (original) Method for controlling a feeding amount of material comprising steps of:

determining whether an intended amount is larger than an alerting amount;

opening feeding means to allow the material to be fed at high feeding rate if the intended amount is larger than the alerting amount;

detecting a feeding rate;

calculating a total fed amount based on the detected feeding rate;

shifting the feeding rate from high to low when the total fed amount reaches a value of difference between the intended amount and the alerting amount;

calculating a preset amount based on the detected feeding rate and delay time of a stopping means to stop feeding the material, and a predicted feeding amount based on the detected feeding rate;

determining whether the intended amount is larger than a summation of calculated total fed amount, the preset amount and the predicted amount;

determining timing that when a signal for working the stopping means should be generated based on a remaining amount to be fed before generating the signal and the predicted feeding amount if the intended amount is less than or equal to the summation in the previous step.

9. (original) Method for controlling a feeding amount of material comprising steps of:

determining whether an intended amount is larger than an alerting amount;

opening feeding means to allow the material to be fed at low feeding rate if the intended amount is less than or equal to the alerting amount;

detecting a feeding rate;

calculating a total fed amount based on the detected feeding rate;

calculating a preset amount based on the detected feeding rate and delay time of a stopping means to stop feeding the material, and a predicted feeding amount based on the detected feeding rate;

determining whether the intended amount is larger than a summation of calculated total fed amount, the preset amount and the predicted amount;

determining timing that when a signal for working the stopping means should be generated based on a remaining amount to

be fed before generating the signal and the predicted feeding amount if the intended amount is less than or equal to the summation in the previous step.

10. (currently amended) Method as defined in ~~claims~~
claim 8, wherein the step of determining timing is made by calculating Δt according to the following equation: $\Delta t = (A-PV-Vpr)/Vr$, wherein A is the intended amount, PV is the total fed amount, Vpr is the preset amount and Vr is the predicted feeding amount.

11. (previously presented) Method as defined in claim 10, wherein the steps until the step of determining whether the intended amount is larger than a summation of calculated total fed amount, the preset amount and the predicted amount are performed at slow scanning rate and the rest of the steps are performed at fast scanning rate.